## AMENDMENT TO THE CLAIMS

The following is a detailed listing of all claims that are, or were, in the Application.

1. (Amended) An apparatus for providing multi-symbol signaling comprising:

a multi-symbol encoder circuit operable to encode data into a plurality of symbols, each symbol uniquely defined by a signal transition and a signal region in a carrier signal, each symbol representing a plurality of data; and

a driver circuit coupled to the multi-symbol encoder circuit, the driver circuit operable to drive the carrier signal.

2. (Original) The apparatus of Claim 1 wherein a signal region is defined with reference to a predetermined voltage.

3. (Original) The apparatus of Claim 1 wherein a signal transition is defined by a change in signal level.

4. (Original) The apparatus of Claim 1 wherein a signal transition can be either a rise or a fall in signal level.

5. (Original) The apparatus of Claim 1 wherein the driver circuit comprises a push-pull driver circuit.

6. (Original) The apparatus of Claim 1 further comprising a differential output driver circuit operable to drive a differential carrier signal.

7. (Original) The apparatus of Claim 1 wherein the driver circuit comprises:

a first supply source;

a second supply source;

a first transistor coupled to the first supply source at a first node; and

a second transistor coupled to the second supply source at a second node and coupled to the first transistor at a third node.

8. (Original) The apparatus of Claim 7 wherein:

the first supply source comprises a first constant current source; and

the second supply source comprises a second constant current source.

9. (Original) The apparatus of Claim 7 wherein:

the first supply source comprises a first voltage source; and

the second supply source comprises a second voltage source.

10. (Original) The apparatus of Claim 7 further comprising a stabilization control circuit coupled to the multi-symbol encoder circuit, the stabilization control circuit operable to generate control signals for stabilizing the first and second nodes.

11. (Original) The apparatus of Claim 10 further comprising:

a third transistor coupled to the first node and operable to receive a first control signal from the stabilization control circuit;

a fourth transistor coupled to a second node and operable to receive a second control signal from the stabilization control circuit.

12. (Original) An apparatus for recovering data from multi-symbol signaling comprising:

a pre-amplifier operable to receive a carrier signal conveying a plurality of symbols, each symbol uniquely defined by a signal transition and a signal region in the carrier signal, each symbol representing a plurality of data;

a region detector coupled to the pre-amplifier and operable to determine the defining signal region for each symbol; and

a transition detector coupled to said pre-amplifier and operable to determine the defining signal transition for each symbol.

13. (Original) The apparatus of Claim 12 wherein a signal region is defined with reference to a predetermined voltage.

14. (Original) The apparatus of Claim 13 wherein a signal transition is defined by a change in signal level.

15. (Original) The apparatus of Claim 12 wherein a signal transition can be either a rise or a fall in signal level.

16. (Original) The apparatus of Claim 12 wherein the pre-amplifier is operable to generate a pair of differential signals for the carrier signal.

17. (Original) The apparatus of Claim 16 wherein the transition detector is operable to sample each of the pair of differential signals at least twice for each symbol.

18. (Original) The apparatus of Claim 16 wherein the transition detector comprises a differencing circuit operable to store a first value for each of the pair of differential signals in a first time period and a second value for each of the pair of differential signals in a second time period.

19. (Amended) The apparatus of Claim 18 wherein the transition detector comprises a differential latch amplifier coupled to the differencing circuit, the differential latch amplifier operable to receive the stored first and second values for each of the pair of

differential signals, the differential latch amplifier operable to differentially amplify a first node and a second node in response to the received first and second values.

20. (Original) The apparatus of Claim 16 wherein the region detector is operable to take an average value for each of the pair of differential signals for each symbol.

21. (Original) The apparatus of Claim 16 wherein the region detector comprises an averaging circuit operable to store a first value for each of the pair of differential signals in a first time period and a second value for each of the pair of differential signals in a second time period, the averaging circuit operable to provide a first average value of the stored first and second values for one of the pair of differential signals and to provide a second average value of the stored first and second values for the other of the pair of differential signals.

22. (Amended) The apparatus of Claim ~~16~~ 21 wherein the region detector comprises a differential latch amplifier coupled to the averaging circuit, the differential latch amplifier operable to receive the first average value and the second average value, the differential latch amplifier operable to differentially amplify a first node and a second in response to the received first and second average values.

23. (Amended) A method for providing multi-symbol signaling comprising:

receiving data for output from an originating device;

encoding the data into a plurality of symbols, each symbol uniquely defined by a signal transition and a signal region in a carrier signal, each symbol representing a plurality of data; and

transmitting the carrier signal out of the originating device to a destination device.

24. (Original) The method of Claim 23 wherein a signal region is defined with reference to a predetermined voltage.

25. (Original) The method of Claim 23 wherein a signal transition is defined by a change in signal level.

26. (Original) The method of Claim 23 wherein a signal transition can be either a rise or a fall in signal level.

27. (Original) The method of Claim 23 further comprising:

generating a differential carrier signal; and

transmitting the differential carrier signal out of the originating device to a destination device.

28. (Original) A method for recovering data from multi-symbol signaling comprising:

receiving a carrier signal conveying a plurality of symbols, each symbol uniquely defined by a signal transition and a signal region in the carrier signal, each symbol representing a plurality of data;

determining the defining signal region for each symbol; and

determining the defining signal transition for each symbol.

29. (Original) The method of Claim 28 comprising generating a first and a second differential signal from the carrier signal.

30. (Original) The method of Claim 29 wherein determining the defining signal region comprises taking an average value of the first and the second differential signals for each symbol in the carrier signal.

31. (Original) The method of Claim 29 wherein determining the defining signal transition comprises sampling each of the first and the second differential signals for each symbol in the carrier signal.

32. (Amended) A system for providing multi-symbol signaling comprising:

a multi-symbol transmitter operable to encode a first sequence of data into a first plurality of symbols, each symbol uniquely defined by a signal transition and a signal region, each symbol representing a plurality of data, the multi-symbol transmitter operable to output a first transmission signal conveying the first plurality of symbols; and

a multi-symbol receiver operable to receive a second transmission signal conveying a second plurality of symbols, the second plurality of symbols representing a second sequence of data, the multi-symbol receiver operable to recover the second sequence of data by detecting a signal transition and a signal region for each symbol.

33. (Original) The system of Claim 32 wherein the multi-symbol receiver comprises:

a region detector operable to determine the defining signal region for each of the second plurality of symbols; and

a transition detector operable to determine the defining signal transition for each of the second plurality of symbols.

34. (Original) The system of Claim 32 wherein the multi-symbol transmitter is further operable to generate a differential transmission signal for the first transmission signal.

35. (Amended) A receiver comprising:

a pre-amplifier operable to receive a symbol stream and generate a differential output, wherein the symbol stream comprises a plurality of symbols with each symbol

uniquely defined by a signal transition and a signal region in a carrier signal, each symbol representing a plurality of data;

at least one region detector coupled to said pre-amplifier and operable to detect and output at least one bit from said differential output; and

at least one transition detector coupled to said pre-amplifier and operable to detect and output at least one other bit from said differential output.

36. (Original) The receiver of Claim 35, wherein said at least one region detector further comprises a first region detector to process data corresponding to odd-numbered clock cycles and a second region detector to process data corresponding to even-numbered clock cycles; and

wherein said at least one transition detector further comprises a first transition detector to process data corresponding to odd-numbered clock cycles and a second transition detector to process data corresponding to even-numbered clock cycles.

37. (Original) The receiver of Claim 35, wherein said pre-amplifier is further operable to receive a predetermined voltage indicating characteristics of a transmission channel through which said symbol stream was transmitted.

38. (Original) The receiver of Claim 35, wherein said pre-amplifier is further operable to receive a bias voltage which biases said pre-amplifier in a saturation region to ensure linear operation.

39. (Original) The receiver of Claim 35, wherein said bias voltage is process, voltage, and temperature compensated.

40. (Original) The receiver of Claim 35, wherein said at least one region detector comprises:

an averaging circuit coupled to said pre-amplifier;

a differential latch amplifier coupled to said averaging circuit; and

a hold circuit coupled to said differential latch amplifier.

41. (Original) The receiver of Claim 35, wherein said at least one transition detector comprises:

a differencing circuit coupled to said pre-amplifier;

a differential latch amplifier coupled to said differencing circuit; and

a hold circuit coupled to said differential latch amplifier.

42. (Amended) A method for processing transmitted symbols comprising:

receiving a symbol stream and generating a differential output, wherein the symbol stream comprises a plurality of symbols with each symbol uniquely defined by a signal transition and a signal region in a carrier signal, each symbol representing a plurality of data;

determining at least one bit from said differential output by detecting whether a portion of said symbol stream is within a defining voltage region; and

determining at least one other bit from said differential output by detecting a voltage transition in a portion of said symbol stream.

43. (Original) The method of Claim 42, wherein said detecting a voltage transition in a portion of said symbol stream further comprises determining whether said voltage transition is positive or negative.

44. (Original) The method of Claim 42, further comprising receiving a predetermined voltage indicating characteristics of a transmission channel through which said symbol stream was transmitted and referencing said voltage regions and said voltage transitions relative to said predetermined voltage.

45. (Original) The method of Claim 42, wherein said detecting whether a portion of said symbol stream is within defined voltage regions comprises:

averaging a first portion of said differential output to obtain a first average;

averaging a second portion of said differential output to obtain a second average;

amplifying the difference between said first and second averages to obtain a first and second voltage; and

processing said first and second voltages to determine said at least one bit.

46. (Original) The method of Claim 42, wherein said detecting a voltage transition of a portion of said symbol stream comprises:

sampling said differential output;

amplifying the difference between a plurality of samples to obtain a first and second voltage; and

processing said first and second voltages to determine said at least one other bit.

47. (Amended) A system for providing multi-symbol signaling between monolithic semiconductor devices, the system comprising:

a transmitter circuit integral to a first monolithic semiconductor device, the transmitter circuit operable to encode a sequence of data into a plurality of symbols, each symbol uniquely defined by a signal transition and a signal region, each symbol representing a plurality of data, the transmitter circuit operable to output a transmission signal conveying the plurality of symbols; and

a receiver circuit integral to a second monolithic semiconductor device, the receiver circuit operable to receive the transmission signal conveying the plurality of symbols, the receiver circuit operable to recover the sequence of data by detecting the signal transition and the signal region for each symbol.

48. (Original) The system of Claim 47 wherein at least one of the first and second monolithic semiconductor devices comprises a processing device.

49. (Original) The system of Claim 47 wherein at least one of the first and second monolithic semiconductor devices comprises a memory device.

50. (Amended) A system for providing multi-symbol signaling within a monolithic semiconductor device, the system comprising:

an originating element formed on the monolithic semiconductor device, the originating element operable to encode a sequence of data into a plurality of symbols, each symbol uniquely defined by a signal transition and a signal region, each symbol representing a plurality of data, the originating element operable to output a transmission signal conveying the plurality of symbols; and

a destination element formed on the monolithic semiconductor device, the destination element operable to receive the transmission signal conveying the plurality of symbols, the destination element operable to recover the sequence of data by detecting the signal transition and the signal region for each symbol.